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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

January 10, 2012

TO: Internal File

THRU: James Owen, Team Lead JO

FROM: Priscilla Burton, CPSSc, Environmental Scientist III PWB by SRS

RE: Excess Spoils Disposal Area #2 Amendment, Sunnyside Cogeneration Associates, Sunnyside Refuse/Slurry, Permit # C/007/0035, Task ID # 3992

SUMMARY:

The revised Excess Spoils Disposal Area #2 [Expansion] Amendment should be approved as received on December 22, 2011. An earlier review of this information was given the task number 3893. The Excess Spoil Pile #2 has reached capacity of 217,000 cu yds. This submittal provides for an additional 350,000 cu yds disposal capacity in Phase 2 and 710,000 cu yds in Phase 3 of the Excess Spoils Disposal Area #2.

Cover material for reclamation of the existing Excess Spoil Pile #2 (Phase 1) will come from the excavation of Material Storage Yard 3 (See Plate 5-1). Three feet of subsoil cover estimated to be 39,000 cu yd) will be removed from Material Storage Yard 3 and hauled to Phase I of the Excess Spoil Disposal Area #2. The analysis of the cover material is provided as Appendix 2-12. The subsoil is suitable for use as cover. Best management practices for application of seed and incorporation of mulch are described (App. 9-7 p. 10).

TECHNICAL ANALYSIS:

OPERATION PLAN

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Refuse Piles

Section 9.6.5 (p. 900-12) describes construction and reclamation of Excess Spoil #2 in phases.

No material was hauled to Spoil pile #2 in the year 2010.

Eight samples of spoil pile #2 were collected in August 2009 and analyzed by America West Analytical in March 2010. The pH values fell between 8.06 and 8.46. The samples were analyzed for B, Ca, Se, Mg, Na, using total metals analysis. SAR values were incorrectly calculated based upon total metals. The analytical methods used make the SAR, B and Se values difficult to interpret for agronomic purposes. The Permittee has decided to cover the excess spoil with four feet of cover, eliminating the need to resample. The analysis of the waste in the Excess Spoil Disposal Area #2 was sent to the Incoming Folder on April 12, 2011.

Findings:

The information provided meets the requirements of the R645 Coal Rules.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Plate 10-6 illustrates the location for placement of 4 feet of borrow over a total of 37 acres. The current Excess Spoil Pile #2 is Phase 1 (8 acres). The Excess Spoil Pile will expand to cover the entire area with Phase 2 being 8 acres, and Phase 3 being 22 acres.

Appendix 2-12 provides an analysis of the soil to be used as cover over Phase 1 Excess Spoil Pile #2. (Phase 1 is 8 acres.) Section 9.8.5 describes the application of 50 lbs/ac 16-16-8 fertilizer and 0.5 Ton/ac straw mulch to the subsoil, followed by placement of one foot of topsoil from the Clear Water, Slurry Pond and Hoist House storage piles and from vegetated slopes adjacent to the Material Storage Yard 3. Topsoil will also be enhanced with 200 lbs/ac 16-16-8 fertilizer and 1.0 Ton/ac straw mulch which will be incorporated into the topsoil layer with roughening.

The plan to incorporate fertilizer into the subsoil and topsoil cover material is the best approach for the following reasons:

This soil was buried beneath a waste pile that was excavated for fuel. There was no vegetation on the surface. Nitrate-Nitrogen in the samples was between 0.5 to 1.2 **ppm**. Nitrate nitrogen is one component of Total Nitrogen and in a soil with low organic matter, it is likely the largest component. In this instance, we can assume that Nitrate-N is approximately equal to the Total N, which is reported in **%**. However the Nitrate-N is reported in ppm and must be divided by 10,000 to give a percent value. Therefore, the Nitrate-N value for the samples would correlate to a Total N% of 0.000054% to 0.000118%. These are very low values, compared to the average value of 0.06 to 0.5 in cultivated soils. Nitrogen will be needed in the soil profile to support bacterial decomposition of the mulch incorporated into the cover soil and the wood fiber hydromulch blown on top. That ultimately will create a source of organically bound nitrogen that will sustain the plant growth overtime.

In addition the Old Coarse Refuse Road (OCRR) was reclaimed using 16-16-8 fertilizer (210 lbs/ac). The cover material had 0.04 to 0.08% Total N. (Vegetation on the OCRR was well established and the area recently received bond release.) The 3rd and 4th lift of the coarse refuse pile were reclaimed in the spring of 1994 with 2 ft. of cover and 150 lbs/ac 16-16-8. Total N% of the cover material was reported to be 0.07%.

A comparison could be made with the East Slurry Cell embankment which received interim reclamation in 1995 without fertilizer. The East Slurry Cell soils had 0.07% total N.

Findings:

The information provided meets the requirements of the Utah R645 Coal Rules.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Appendix 9-7 describes the incorporation of 1.0 T/ac hay mulch and fertilizer into the surface with roughening, followed by seeding with the final mix and the inclusion of a slow release fertilizer. The following best-management practices are described on page 10 of Appendix 9-7:

- Hand broadcast fertilizer over the surface prior to applying straw mulch.
- Incorporation of the fertilizer and straw mulch into the soil with roughening.
- Either hand broadcast or hydroseed using the final mix (Figure 10-3).
- If the hydroseeding technique is used, than 1,500 lbs/acre wood fiber mulch will applied at the same time.

Findings:

The information provided meets the requirements of the Utah R645 Coal Rules

RECOMMENDATIONS:

The information should be approved and incorporated.

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